

A NEW SPECIES OF *LOMATIUM* (APIACEAE) FROM SOUTHWESTERN OREGON

JAMES S. KAGAN

The Nature Conservancy, 1234 NW 25th Ave.,
Portland, OR 97210

ABSTRACT

Lomatium cookii, a new species from vernal pools in the Agate Desert area near Medford, Oregon, is described and illustrated. The species appears to be local and rare. It is morphologically most similar to another rare Oregon endemic, *Lomatium bradshawii*, of the southern Willamette Valley, and to a northern California endemic, *Lomatium humile*.

The Agate Desert region, an approximately 10,000 ha area of the Rogue River Valley north of Medford, Oregon, has long been known for its botanical diversity (Detling 1968). In 1981, during a search for populations of *Limnanthes floccosa* subsp. *grandiflora* in the Agate Desert, a new species of *Lomatium* was discovered.

***Lomatium cookii* J. S. Kagan, sp. nov.**

Planta perennis, glabris, acaulis vel subacaulis, 1.5–5 dm alta; radice elongata, angusta, 1.5–3 dm longa aut incrassata ob caudicem 2–8 ramosum plantam multicaulem formantem. Foliis radicalibus oblongis 8–17 cm longis petiolo excluso, 2.5–10 cm latis, ternatis deinde tripinnatisectis, segmentis ultimis linearibus, acutis, nonnunquam apiculatis, distinctis, 6–12 mm longis, minus quam 1 mm latis; petiolis vaginatis, 5–22 cm longis. Pedunculis foliis longioribus, 1.5–4 dm longis; umbellis 6–12 radiatis, radiis fertilibus 2–9 cm longis, inaequaliter elongatis, radiis sterilibus 1–2 cm longis; involucri nullo; bracteis involucelliorum 8–12, 6–10 mm longis, linearibus, viridibus, marginibus scariosis; pedicellis fruitificantibus 1–3 mm longis; floribus flavis. Fructibus oblongis, 8–13 mm longis, 4–6 mm latis, alis lateralibus suberosis, crassis, alis dorsalibus ternis, filiformibus, elevatis; vittis plerumque obsoletis (Fig. 1).

Plant perennial, glabrous, acaulescent or subacaulescent, 1.5–5 dm tall; root elongate, narrow, 1.5–3 dm long, simple, occasionally surmounted by a thickened 2–8-branched caudex. Leaves oblong, 8–17 cm long excluding petiole, 2.5–10 cm broad, ternate then tripinnatisect, ultimate segments linear, acute, or sometimes apiculate, 6–12 mm long, less than 1 mm broad; petioles vaginate, 5–22 cm long. Peduncles exceeding leaves, 1.5–4 dm long; umbels 6–12-radiate, fertile rays 2–9 cm long, unequally elongate, sterile rays 1–2 cm long;

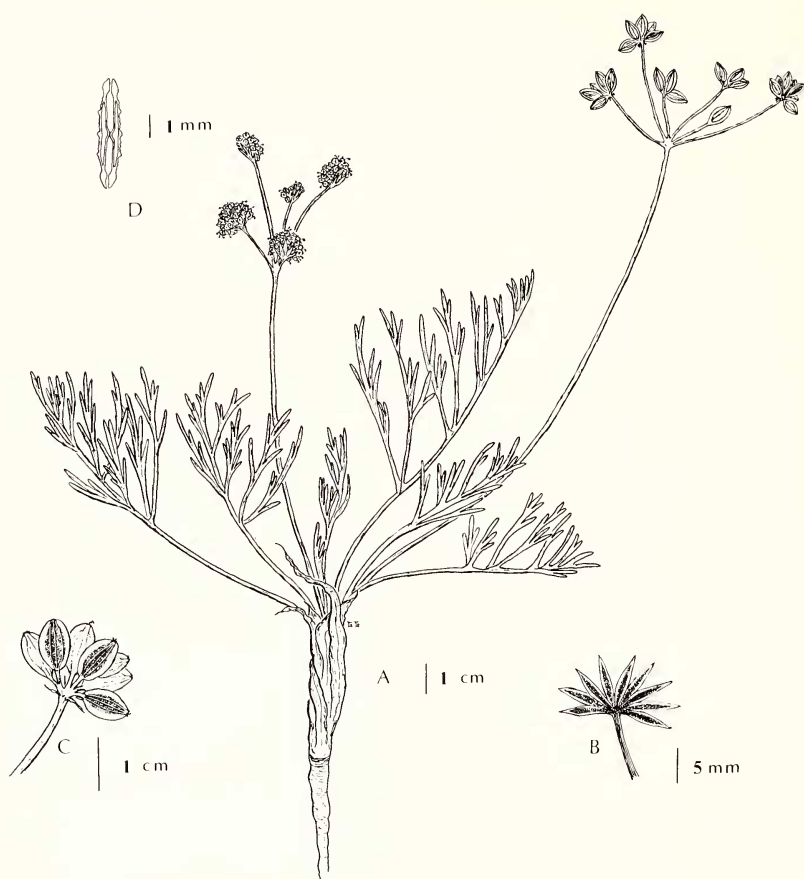


FIG. 1. *Lomatium cookii*. A. Habit. B. Bractlets of involucre. C. Fruits. D. Fruit cross section.

involucre none; involucre bractlets 8–12, 6–10 mm long, linear, green, margins scarious; fruiting pedicels 1–3 mm long; flowers yellow. Fruits oblong, 8–13 mm long, 4–6 mm wide, lateral wings corky, thick, dorsal ribs three, filiform, elevated; oil tubes obsolete.

TYPE: USA, Oregon, Jackson Co., Agate Desert vernal pools, just nw. of junction of Antelope and Table Rock Roads (T36S R2W S24 nw. $\frac{1}{4}$); 380 m elev.; 1 Jun 1983, *J. S. Kagan 6018301* (Holotype: ORE; isotypes: UC, OSC).

PARATYPES. USA, Oregon, Jackson Co., Agate Desert vernal pool margins, off road to Jackson Co. Sports Park (T36S R1W S22 se. $\frac{1}{4}$), 12 May 1983, *J. S. Kagan 5128303, 04, 05* (ORE, OSC); Agate Desert vernal pool margins, just south of Hwy. 140, 4 mi e. of Hwy.

64 (T36S R1W S23 sw. $\frac{1}{4}$), 13 Apr 1983, J. S. Kagan 4138301 (ORE).

Ecology and phenology. *Lomatium cookii* is found on margins and bottoms of vernal ponds in an area having "patterned ground" topography. The flat landscape is composed of a continuous series of shallow vernal pools surrounded by low mounds. The pools have stony, pebbly bottoms, whereas the mounds are composed of relatively rock-free light clay of volcanic origin. The area is an ancient alluvial outwash plain adjacent to the Rogue River. The vernal pools have standing water only in the winter and early spring, from December to April or May, and appear somewhat dry and barren from July to October. Common species (nomenclature follows Munz 1959) of the vernal pools include *Deschampsia danthonioides*, *Alopecurus geniculatus*, *Plagiobothrys austinae*, *P. bracteatus*, *P. nothofulvus*, *Juncus uncialis*, *Navarretia leucocephala*, *N. tagetina*, and *Limnanthes floccosa*. The mounds are usually dominated by non-native grasses including *Bromus mollis*, *B. commutatus*, *Cynosurus echinatus*, *Elymus caput-medusae*, and *Poa bulbosa*, but also can have a significant component of native forbs such as *Saxifraga integrifolia*, *Viola douglasii*, *Brodiaea pulchella*, *B. hyacinthina*, and *Lupinus bicolor*.

This species blooms from mid-March through mid-May, depending on the season. Many plants bloom while in standing water. The plants usually have 2–5 flowering umbels. The earliest inflorescences are largely male, with most of the flowers having undeveloped ovaries. The later umbels have perfect flowers and produce almost all of the fruits. The only floral visitor observed was a small black moth, as yet unidentified. *Lomatium cookii* is protogynous, having stigmas that are exposed and receptive to pollen prior to anther dehiscence in the same flower. Mature fruit is present from late May through July.

Relationship to other species. There are 2 other species of *Lomatium* occurring in the Agate Desert area. *Lomatium utriculatum* (Nutt.) Coult. and Rose commonly occurs on the mounds, and is easily distinguishable from *L. cookii* by its obovate involucre bracklets, cauline habit, and thin winged fruits. *Lomatium macrocarpum* (Nutt.) Coult. and Rose occurs on vernal pool margins, as well as on hillsides at the edges of mounded prairie areas. In the Rogue Valley, it is distinguishable from *L. cookii* by its pubescent herbage, pale white to tan flowers, and narrow, thin winged fruits.

Lomatium cookii is very similar to *L. bradshawii* (Rose) Math. and Const., a species indigenous to wet prairies of the southern Willamette Valley, Oregon. It is most easily differentiated by the narrow, linear involucre bracklets, as opposed to the wider, ternately or biternately divided bractlets of *L. bradshawii*. In cross section,

the fruit of *L. cookii* has dorsal ribs that are clearly raised and are 80–120 μm in diameter, whereas *L. bradshawii* has ribs that are less distinct, 35–50 μm in diameter, and are imbedded in the thick, stratified cortex. The endocarp of the fruit of *L. cookii* is three layers thick, whereas in *L. bradshawii* it is 5–6 layers thick. Plants of *L. cookii* tend to be shorter but more robust, having more umbels and stems per plant than plants of *L. bradshawii*. In ungrazed populations, *L. cookii* has a mean pedicel height of 24 cm in fruit, and averages 4 fruiting umbels per plant ($n = 34$); whereas *L. bradshawii* has a mean pedicel height of 31 cm, and averages less than 2 fruiting umbels per plant ($n = 100$). Both species grow from a long, slender taproot. Plants of *L. cookii* appear more robust because, in about half of the plants observed, the taproot is surmounted by a multiple caudex (2, 4, and 6 are the most common stem numbers). Of the more than 500 plants of *L. bradshawii* observed, only 6 plants had multiple caudices (Kagan 1980).

Lomatium cookii also is similar to *Lomatium humile* (Coult. & Rose) Hoover. This taxon also is described as *Lomatium caruifolium* (H. & A.) C. & R. var. *denticulatum* (Jepson) Jepson (Jepson 1936). *Lomatium cookii* and *L. humile* both occur in plains with vernal ponds and have similar fruits and bractlets. *Lomatium humile* has 4 to 6 dorsal ribs on the fruit, whereas *L. cookii* has only 2. Also, the fruit of *L. humile* is inflated in the commissure, whereas *L. cookii* has fruit that is not inflated. Although the bractlets of these taxa are fairly similar in appearance, those of *L. cookii* are linear and 6–10 mm long, whereas those of *L. humile* are orbicular to lanceolate, and usually shorter, 3–5 mm long. The two taxa are most easily distinguished by the leaves, which in *L. humile* have ultimate segments ranging from 2–60 mm long (Abrams 1951), and averaging about 15–20 mm. The ultimate segments of the leaves of *L. cookii* are much smaller, usually between 6–10 mm long.

Distribution and status. *Lomatium cookii* is both rare and threatened (Oregon Natural Heritage Data Base 1985). In thorough searches of the Agate Desert area in 1982 and 1983, only 3 small populations of the species were identified. Fewer than 2000 plants have been observed, and 90% of these were at the type locality. Plants are readily eaten by cattle. Most available habitat has been very heavily grazed, and in these areas plants of this species are not present. In addition, large portions of the Agate Desert, including the type locality, are in the process of being developed for heavy industry, causing additional habitat destruction. Thus, it appears that *L. cookii* may be a good candidate for the Endangered Species List of the U.S. Fish and Wildlife Service.

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ANNOUNCEMENT

Phytologia Memoir VI, *A Preliminary, Verified List of Plant Collectors in Mexico*, is a 179 page booklet containing the names of over 4000 plant collectors of Mexico with some 800 references to their collecting activities. The work should prove of interest to all who have or intend to collect in Mexico. It can be ordered from the compiler, Dr. Irving W. Knobloch, 438 Tulip Tree, E. Lansing, MI 48823, for \$16.00 domestic, \$17.00 foreign surface mail, and \$19.00 foreign air mail (identification number 479-22-0904 A).